|  |  |  |  |
| --- | --- | --- | --- |
| **Instructor** |  | **Due Date** |  |

**PROJECT Downloading SQL Developer**

**Objective** To download and utilize the Oracle SQL Developer interface.

***PROJECT DESCRIPTION***

Design and utilize a database table using the datasheet information provided in **Figure 2** , which follows. The table consists of database records associated with a Compact Disc audio collection. You will use Oracle SQL code to create your table.

***Information About This Project***

Oracle SQL Developer is a tool to manage your Oracle database.

SQL Developer is a free, integrated development environment that simplifies the development and management of Oracle Database in both traditional and Cloud deployments. SQL Developer offers complete end - to - end development of your PL/SQL applications, a worksheet for running queries and scripts, a DBA console for managing the database, a reports interface, a complete data modeling solution, and a migration platform for moving your 3rd party databases to Oracle.

***Steps To Complete This Project***

**STEP 1** **Use SQL Developer to Create Database Applications**

Download Oracle’s SQL Developer from the following site:

[**https://www.oracle.com/database/sqldeveloper/**](https://www.oracle.com/database/sqldeveloper/)

You may have to register with oracle.

For SQL Developer, choose the appropriate platform for the download. Notice that if you use a MAC, Oracle also provides for downloading SQL Developer on a MAC platform.

**STEP 2** **Connect to a Live Oracle Server**

To connect to a live Oracle server, follow these steps:

If you successfully downloaded the SQL Developer software, then to connect to the server, go near to the upper left where there is a green cross. Once you click on that **green cross**, a window will appear where you must fill in various textbox values.

Refer to the sample screenshot which follows.

**PROJECT Downloading SQL Developer**

Click the **green cross** to create a connection**.**

A screenshot of a computer

Description automatically generated

Once, select the **green cross**, the **[ New / Select Database Connection ]** window appears. A screenshot of a computer

Description automatically generated

**PROJECT Downloading SQL Developer**

  For the window that appears, enter your Full Name for the Connection under the Name text box.

Then, select or fill the Connection window, with these settings:

Database type: Oracle

Username: is the name assigned to you

Password: oracle ( lower case ) [ unless otherwise stated ]

Role: default

Connection Type: Basic

Hostname: is the address assigned to you

Port: 1521

SID: is the ID assigned to the server

Click on the [ Test ] button at the bottom of the window to see if you can connect.

If you see Status: Success, then press the [ Connect ] button at the bottom of the window.

You will be ready to go and perform SQL!!!

**STEP 3** **Proceed to the Next Project**

Proceed to the next project, where you will utilize SQL Developer.

**PROJECT TWO Using Oracle SQL to Create a DB File**

**Objective** To create a database table using Oracle SQL statements.

***PROJECT DESCRIPTION***

Design and utilize a database table using the datasheet information provided in **Figure 2** , which follows. The table consists of database records associated with a Compact Disc audio collection. You will use Oracle SQL code to create your table.

***Information About This Project***

This lab project uses Oracle SQL to enable you to design a database table that stores information pertaining to an audiotape collection. Understanding beginning DB concepts and structure in Oracle is important to establish a good foundation in using SQL.

***Steps To Complete This Project***

**STEP 1** **Use SQL to Create a Database Table**

Log into SQL and create a new database table named **audio**, whose field names and data types are listed in **Figure 1** below.

**Figure 1 audio Table**

|  |  |  |
| --- | --- | --- |
| Field Name | Data Type | Description |
| **num\_id** | NUMBER | primary key |
| **title** | VARCHAR2 | the title of the song |
| **artist** | VARCHAR2 | the featured artist |
| **label** | VARCHAR2 | the record label |
| **year** | NUMBER | the year issued |
| **price** | NUMBER | the commission rate |

Once you arrive at the SQL workspace window, use the following code to create

a table named **audio**.

|  |
| --- |
| **-- DROP TABLE audio;**  **CREATE TABLE audio**  **(num\_id NUMBER (3),**  **title VARCHAR2 (30),**  **artist VARCHAR2 (30),**  **label VARCHAR2 (30),**  **year NUMBER (4),**  **price NUMBER (5,2),**  **CONSTRAINT audio\_num\_id\_pk PRIMARY KEY (NUM\_ID));** |

**PROJECT TWO Using Oracle SQL to Create a DB File**

Note: It is highly recommended that you type all your SQL code in Notepad and save the file with “.sql” extension. For example, audio.sql. This should also include the code to populate the table (see below). [There is a file labeled audio.sql in the Lab Assignments folder that you can use! Just go to File->OPEN->browse and find the file audio.sql; The script for table will appear in the SQL workspace -> just click the Run Script icon and the table will be created and populated.]

**STEP 2 Use SQL to Describe the Table**

Within the workspace window, type in the following code:

**DESCRIBE audio;**

Take a screen snapshot of the output and paste it in an MS Word document with proper headings (e.g., Lab 2, Project 1). [ Use the typical Lab Submittal Document Template ]

Which field is described as "Not Null"? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**STEP 3** **Populate the Table from Your Datasheet Information in Your Table**

**For each record** to be inserted into the table from **Figure 2** , use the following code:

**INSERT INTO audio**

**VALUES (1, 'All Mixed Up', 'LaBouche', 'RCA', 1996, 13.95);**

Note: Before the INSERT CODE, type at the prompt "SET SCAN OFF" and this will enable the recognition of the "&" in "A&M". ALSO, BECAREFUL OF THE QUOTATION MARK – better to write the SQL code in NOTEPAD!!!!, as we have for this code snippet.

Finally, after you have finished typing all insert statements for the records in Notepad, enter the following at the end of the code.

**Commit;**

**Once the code is executed along with the "commit" statement, the data**

**will be saved to the server.**

**STEP 4 Supplement Your Audio Table with Five Additional Records**

Now, supplement your Audio table by adding five additional records, which contain music of your liking.

For Compact Disc or Vinyl listings, you can visit Music and Movies Web sites such as:

[**https://www.fye.com/**](https://www.fye.com/) **( For Your Entertainment )**

For one of the five additional records, create a fictitious music album with your own name as the performer.

**PROJECT TWO Using Oracle SQL to Create a DB File**

**STEP 5 View the Records in Your Audio Table**

Once you have completely entered the entries from **Figure 2** ,type in the following SQL code to view all the entries in the table.

**SELECT \***

**FROM audio;**

Take a screen snapshot of the output. Proceed to the next project.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Figure 2 Datasheet for the Data File Audio**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| Number | Title | Artist | Label | Year | Price |
|  |  |  |  |  |  |
| 1 | All Mixed Up | La Bouche | RCA | 1996 | $ 13.95 |
| 2 | Load | Metallica | Elektra | 1996 | $ 11.95 |
| 3 | In The Mirror | Yanni | Windham Hill | 1997 | $ 12.99 |
| 4 | Pure Moods | Various | Virgin | 1994 | $ 13.95 |
| 5 | Ozzmosis | Ozzy Osbourne | Epic | 1995 | $ 12.45 |
| 6 | Anthology 3 | The Beatles | Apple | 1996 | $ 23.95 |
| 7 | To The Faithful Departed | The Cranberries | Island | 1996 | $ 13.45 |
| 8 | Watermark | Enya | Reprise Records | 1988 | $ 10.99 |
| 9 | Sheryl Crow | Sheryl Crow | A&M | 1996 | $ 13.95 |
| 10 | 16 Most Requested Songs | Andy Williams | Columbia Records | 1986 | $ 12.95 |
| 11 | Escape From Television | Jan Hammer | MCA Records | 1987 | $ 11.95 |
| 12 | Crystal Planet | Joe Satriani | Epic Records | 1998 | $ 13.95 |
| 13 | Shepherd Moons | Enya | Reprise Records | 1992 | $ 12.45 |
| 14 | Very Best Of Mikis Theodorakis | Mikis Theodorakis | FM Records | 1997 | $ 15.99 |
| 15 | Albedo 0.39 | Vangelis | Windham Hill | 1975 | $ 10.95 |
| 16 | Music From Mission Impossible | Lalo Schifrin | Hip-O Records | 1996 | $ 12.99 |
| 17 | The Rock Original Soundtrack | Hans Zimmer | Hollywood | 1996 | $ 12.49 |
| 18 | Aquarium | Aqua | MCA Records | 1997 | $ 14.99 |
| 19 | The Very Good Years | Frank Sinatra | Reprise Records | 1991 | $ 11.99 |
| 20 | Collective Soul | Collective Soul | Atlantic Recording | 1995 | $ 11.95 |
| 21 | My Favorite Chopin | Van Cliburn | RCA Victor | 1961 | $11.99 |
| 22 | Joe Cocker Ultimate Collection | Joe Cocker | Hip-O Records | 2004 | $10.99 |

**PROJECT THREE Creating Queries using SQL**

**Objective** To create a simple query using SQL.

***PROJECT DESCRIPTION***

This project enables you to find information within an Oracle database by designing and running a query.

***Information About This Project***

Some of the benefits of working with database tables are that information within the database can be sorted and filtered to provide easier access to various records.

***Steps To Complete This Project***

**STEP 1** **Create a Database Query Using SQL**

Logon to your Oracle account. Once you are at the system prompt, type in the following code:

|  |
| --- |
| **SELECT Title, Year**  **FROM Audio**  **WHERE Year > 1990**  **ORDER BY Title, Year ;** |

After the code is executed, copy and paste the resulting records into your lab submittal document.

**STEP 2** **Modify the SQL Code**

Modify your code so that the following query can be run.

|  |
| --- |
| **SELECT Title, Year**  **FROM Audio**  **WHERE Year >= 1992 And Year <= 1995**  **ORDER BY Title, Year;** |

After the code is executed, copy and paste the resulting records into your lab submittal document.

**STEP 3** **Create Four New Queries in the SQL**

Next, modify your SQL code again to create four separate queries.

**New Query 1**

First, write an SQL query that, when run, will display all audio titles whose price is strictly between $ 12.00 and $ 16.00 .

After running the above query, copy the resulting query datasheet and submit the hardcopy for credit.

**PROJECT THREE Creating Queries using SQL**

**New Query 2**

Second, write an SQL query that, when run, will display all audio titles which either have an Epic record label or which have a year other than 1999 .

Hint: include the following **WHERE** clause in your query.

**WHERE (YEAR < > 2000)**

After running the above query, copy the resulting query datasheet and submit the hardcopy for credit.

**New Query 3**

Finally, write an SQL query that, when run, will display all records in your database table whose title does not begin with an "A."

Hint: include the following **WHERE** clause in your query.

**WHERE (TITLE NOT Like 'A%')**

After running the above query, copy the resulting query datasheet and submit the hardcopy for credit.

**New Query 4**

Next, write an SQL query that will display all field names and all records in your database table whose title does not begin with an "A" nor with an "S."

Hint: include the following **WHERE** clause in your query.

|  |
| --- |
| **WHERE TITLE NOT Like 'A%' And Title NOT Like 'S%'** |

After running the above query, copy the resulting query datasheet and submit the hardcopy for credit.

Proceed to the next project.

**PROJECT FOUR More Table Queries**

**Objective** To create a simple query using Oracle SQL.

***PROJECT DESCRIPTION***

This project enables you to find information within an Oracle database file by designing and running a query.

***Information About This Project***

Some of the benefits of working with database tables are that information within the database can be sorted and filtered to provide easier access to various records.

***Steps To Complete This Project***

**STEP 1** **Create a Database Query**

Query your **Audio** database file to produce only the records whose price is

greater than $13.00.

Hint:

**Select Title, Price**

**From Audio**

**Where Price > 13;**

Paste your results into your lab submittal document.

**STEP 2** **Run the Next Database Query**

Query your **Audio** database file to display only the records whose title begins with the letter S.

**Select Title**

**From Audio**

**Where Title Like 'S%';**

When your query is run, it will display only those records that meet the criteria of having a title, which begins with the letter S.

Paste the results of the query into your lab submittal document. Keep your query open and proceed to the next step.

**STEP 3** **Change to the SQL View**

After you run the above query, modify the code to read as follows:

**SELECT Title, Artist**

**FROM Audio**

**WHERE Artist Like 'M%';**

**PROJECT FOUR More Table Queries**

Run this query and copy the resulting query datasheet and place results in your lab submittal document.

Next, modify your code once again to appear as follows:

Run this query and copy the resulting query datasheet and attach it to your lab submittal packet.

|  |
| --- |
| **SELECT Title, Artist, Price**  **FROM Audio**  **WHERE Artist Like 'E%' OR**  **Title Between 'A' And 'M' OR Price < 12;** |

Proceed to the next project.

**PROJECT FIVE "And" versus "Or"**

**Objective** To create a simple query using Oracle SQL.

***PROJECT DESCRIPTION***

Using the **Audio** database table that you created in **Project One**, design three separate database queries that will display all database records

(a) whose CD label is Reprise Records and whose release year is after 1990 but not after 1998.

(b) whose CD label is Reprise Records or whose release year is prior to 1999 but not before 1995.

(c) whose artist’s name does not begin with a " L " or whose label name begins with an " A."

(d) from your own selections that you placed earlier into the table

***Information About This Project***

This project shows the power of a query to locate database records.

***Steps To Complete This Project***

Login to your Oracle account.

**Query One**

Similar to the instructions of the last project, design a query that will display all database records whose CD label is Reprise Records and whose release year is after 1995 but not after 1998.

Copy the resulting query datasheet and attach it to your lab packet.

**Query Two**

Similar to the instructions of the last project, design a query that will display all database records whose CD label is Reprise Records or whose release year is prior to 1999 but not before 1995.

Copy the resulting query datasheet and attach it to your lab packet.

**Query Three**

Similar to the instructions of the last project, design a query that will display all database records whose artist’s name does not begin with a " L" and whose label name begins with an " A. "

Copy the resulting query datasheet and attach it to your lab packet. Close the

**Select Query** window to return to the **Database** window.

**Query Four**

Similar to the instructions of the last project, design a query that will display all database records from your own selections that you placed earlier into the table.

**PROJECT SIX SQL Developer Questions**

**Objective** This project involves questions on an Oracle database table.

***PROJECT DESCRIPTION***

In a professional and collegiate fashion, respond to the following questions, which concern database tables. Use complete sentences when writing your responses.

***Information About This Project***

Designing database tables means selecting the appropriate proper field names and data types, among other things.

***Steps To Complete This Project***

**STEP 1** **Questions**

Now that you have completed this lab project, review the questions below to reflect on the procedures and settings that you utilized as you followed the steps to complete the project. Place your answers to these questions into your lab submittal document.

**(1) ( Errors in Data Processing )**

What are at least 4 errors that may occur when creating and populating a database table?

**(2)** **( Null Values )**

What is a null value for a field and when does it occur?

**(3) ( Null Values in Calculations )**

What effect does a null value have when calculating the average value for a numeric field ( like salary ) ?

**(4) ( Corrupted Data )**

What will / should a user be able to do if the table becomes corrupted?

**(5) ( SQL Developer Menu Icons )**

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Description automatically generated**

**PROJECT SIX SQL Developer Questions**

(a) You may use the above clause to retrieve the date; then perform the clause:

**select \* from audio;**

(b) Now, individually click on each of the icons for the worksheet and paste the outcome in your lab submittal document.

(c) Also, describe the function associated with each of the icons.